UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,236	10/28/2003	Thomas Lloyd Credelle	CLVT02913-1P US	5279

90323 7590 03/19/2010

Innovation Counsel LLP
21771 Stevens Creek Blvd
Ste. 200A
Cupertino, CA 95014

EXAMINER	
MOON, SEOKYUN	
ART UNIT	PAPER NUMBER
2629	
MAIL DATE	DELIVERY MODE
03/19/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/696,236	CREDELLE, THOMAS LLOYD	
	Examiner	Art Unit	
	SEOKYUN MOON	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8-21,25,26 and 28-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8-21,25,26 and 28-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 March 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Claim Rejections under 35 U.S.C. 112

1. In the previous Office action mailed August 18, 2009, claims 1-5, 8-14, 20, 21, 25, 26, and 28 were rejected under 35 U.S.C. 112, first paragraph.

The Applicant has amended the independent claims 1, 8, and 20. Accordingly, the rejections of claims 1, 8, 20, and the claims depending on claims 1, 8, and 20, under 35 U.S.C. 112, first paragraph have been withdrawn.

The Applicant asserts that the amendments to the independent claim 13 and the claims depending on the claim overcome the rejection under 35 U.S.C. 112, first paragraph. However, Examiner respectfully submits that the Applicant has failed to consider the enablement issue brought up by the Examiner in the previous Office action [pg 7 the last 5 lines]. Specifically, the Applicant has failed to explain how the specification and the drawings of the instant Application support the subject matter, "*... it primarily impacts the at least one column of blue subpixels*" because, in the instant invention, the substantially periodic dot inversion polarity scheme impacts not only the blue subpixels, but also the green subpixels. Since the Applicant has failed to explain how the instant Application supports such subject matter, the rejections of claim 13 and the claims depending on claim 13, under 35 U.S.C. 112, first paragraph are maintained in this Office action.

The Applicant's arguments with respect to the subject matter newly added to the independent claims 1, 8, 13, and 20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 13, 14, 25,** and **31** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As to **claim 1**, the claim discloses, "... *wherein said driver circuit uses a substantially periodic dot inversion polarity scheme*".

However, the specification of the instant Application does not explicitly define what the claimed substantially periodic dot inversion polarity scheme is. Even though, the drawings of the instant Application show a plurality of polarity schemes, none of the polarity schemes appears to be reasonably interpreted as the claimed substantially periodic dot inversion polarity scheme. Accordingly, Examiner respectfully submits that the specification and the drawings of the instant Application do not support the newly added subject matter.

Appropriate corrections/explanations are required.

As to **claims 2-5** and **28**, the claims are rejected as being dependent upon the base claim rejected under 35 U.S.C. 112, first paragraph.

As to **claims 8** and **13**, for the similar reasons stated with respect to the rejection of claim 1, claims 8 and 13 are rejected.

As to **claims 9-12** and **claims 14**, **25**, and **31**, the claims are rejected as being dependent upon the base claims rejected under 35 U.S.C. 112, first paragraph.

As to **claim 13**, the claim discloses, "... *it primarily impacts the at least one column of blue subpixels*". However, as shown on figure 3 of the instant Application and as admitted by the Applicant [Remarks submitted May 04, 2009: pg 10 2nd paragraph], the violation of a periodic dot inversion polarity scheme not only impacts the blue subpixels, but also green subpixels. Examiner respectfully submits that the degree of the image degradation caused by the green subpixels might be less than the degree of the image degradation caused by the blue subpixels, but the impact of the violation on both of the subpixels are same.

Appropriate corrections/explanations are required.

As to **claims 14**, **25**, and **31**, the claims are rejected as being dependent upon the base claim rejected under 35 U.S.C. 112, first paragraph.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

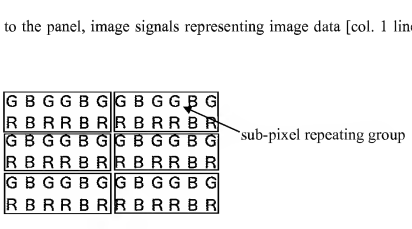
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-2, 8-9, 13-16, 19-21, 25-26,** and **28-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 6,326,981, herein after, "*Mori*") in view of Martin et al. (US 6,714,206, herein after, "*Martin*").

As to **claim 1**, Mori teaches a liquid crystal display [abstract lines 1-2] comprising:

a panel [fig. 4, col. 4 lines 1-2, and drawing 1 provided on page 5 of this Office Action] substantially tessellated by a sub-pixel repeating group comprising differently colored and individually addressable sub-pixels and having an even number of individually addressable sub-pixels including a first colored sub-pixel (the "*G*" in the first row) [drawing 1], a second colored sub-pixel (the first "*B*" in the first row), and a third colored sub-pixel (the second or the third "*G*" in the first row), in a row (the first row of the sub-pixels) [drawing 1], the sub-pixel repeating group further comprising a column of first colored sub-pixels (the two blue sub-pixels arranged in one column of the sub-pixel repeating group as shown on drawing 1), where the color of the first colored subpixels (the two blue sub-pixels arranged in one column of the sub-pixel repeating group as shown on drawing 1) is one to which the human visual system has lower luminance change sensitivity than to other colors of other colored ones of the subpixels in the sub-pixel repeating group; and

a driver circuit sending to the panel, image signals representing image data [col. 1 lines 47-52 and col. 12 lines 12-17].



Drawing 1

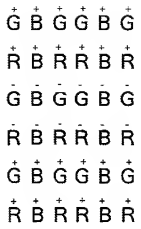
Mori does not teach that the driver circuit uses a substantially periodic dot inversion polarity scheme at one or more of the columns of first colored subpixels such that potential image degradation introduced by the periodic dot inversion polarity scheme is localized on the one or more of the columns of first colored subpixels.

However, Examiner takes Official Notice that it is well known in the art to use a periodic 2-line inversion polarity scheme as a driving method of a liquid crystal display.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the driver circuit of Mori to use a periodic two-line inversion polarity scheme in order to reduce vertical crosstalk caused by having a plurality of pixels/sub-pixels driven by the same polarity.

Mori as modified above teaches that the driver circuit uses a substantially periodic dot inversion polarity scheme at one or more of the columns of first colored subpixels such that potential image degradation introduced by the periodic dot inversion polarity scheme is localized on the one or more of the columns of first colored subpixels (by having two same colored subpixels having the same polarity in one column, the vertical crosstalk still occurs and the image degradation of blue colors caused by the vertical crosstalk occurs) [drawing 2 provided below, which is same as figure 15 of Mori with the two-line inversion polarity scheme].

Drawing 2

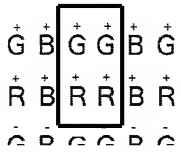


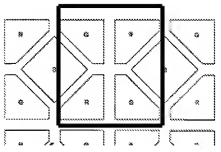
Mori does not teach that the first colored sub-pixel, the second colored sub-pixel, and the third colored sub-pixel have different colors from each other. In other words, because Mori teaches two same colored sub-pixels ("*G*""*G*" and "*B*""*B*") [drawing 2] are arranged consecutively in each of the rows, Mori does not teach that the first colored sub-pixel (the first "*G*" in the first row) and the third colored sub-pixel (the second or the third "*G*" in the first row) have different colors from each other.

However, Martin [drawing 3 provided on page 7 of this Office action, which is same as figure 2 of Martin] teaches the concept of arranging two different colored sub-pixels (the first "*G*" in the first row and the first "*R*" in the fist row) consecutively in a row.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the panel of Mori to arrange two different colored sub-pixels consecutively in a row to avoid arranging two same colored sub-pixels consecutively in a row, as taught by Marin, in order to provide an uniform color illumination by placing the four adjacent sub-pixels having two different colors in a pattern such that the two sub-pixels having a same color are not adjacent to each other in a horizontal direction and in a vertical direction.

Mori





Martin

Drawing 3

As to **claim 2**, Mori teaches the first colored sub-pixels being blue colored sub-pixels (as discussed with respect to the rejection of claim 1).

As to **claim 3**, Mori as modified by Martin teaches that the sub-pixel repeating group substantially comprises a checkerboard of red and green sub-pixels interspersed with two columns of blue sub-pixels [drawing 3].

As to **claim 4**, Mori teaches that for each the subpixel repeating group, the two columns of blue sub-pixels share a same column driver ("*source driver 106*") [fig. 25] (Note that, in the display of Mori, all sub-pixels share the same column driver.).

As to **claim 8**, Mori teaches a method of driving a liquid crystal display having a panel [fig. 4, col. 4 lines 1-2, and drawing 1 provided on page 3 of this Office Action] that is substantially tessellated by a sub-pixel repeating group comprising differently colored and individually addressable sub-pixels and having an even number of individually addressable sub-pixels including a first colored sub-pixel (the "*G*" in the first row) [drawing 1], a second colored sub-pixel (the first "*B*" in the first row), and a third colored sub-pixel (the second or the third "*G*" in the first row), in a row [drawing 1], the sub-pixel repeating group further comprising a column of first colored sub-pixels (the two blue sub-pixels arranged in one column of the sub-pixel repeating group as shown on drawing 1), where the color of the first colored subpixels (the two

blue sub-pixels arranged in one column of the sub-pixel repeating group as shown on drawing 1) is one to which the human visual system has lower luminance change sensitivity than to other colors of other colored ones of the subpixels in the subpixel repeating group; the method comprising:

providing driving signals to the subpixels in the panel [col. 1 lines 47-52 and col. 12 lines 12-17].

Mori does not teach that the providing of the driver signals uses a substantially periodic dot inversion polarity scheme at one or more of the columns of first colored subpixels such that the potential image degradation introduced by the periodic dot inversion polarity scheme is localized on the one or more of the columns of first colored subpixels.

However, Examiner takes Official Notice that it is well known in the art to use a periodic 2-line inversion polarity scheme as a driving method of a liquid crystal display.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mori to use a periodic two-line inversion polarity scheme in order to reduce vertical crosstalk caused by having a plurality of pixels/sub-pixels driven by the same polarity.

Mori as modified above teaches that the providing of the driver signals uses a substantially periodic dot inversion polarity scheme at one or more of the columns of first colored subpixels such that potential image degradation introduced by the periodic dot inversion polarity scheme is localized on the one or more of the columns of first colored subpixels (by having two same colored subpixels having the same polarity in one column, the vertical crosstalk

still occurs and the image degradation of blue colors caused by the vertical crosstalk occurs) [drawing 2].

Mori does not teach that the first colored sub-pixel, the second colored sub-pixel, and the third colored sub-pixel have different colors from each other. In other words, because Mori teaches two same colored sub-pixels ("*G*""*G*" and "*B*""*B*") [drawing 2] are arranged consecutively in each of the rows, Mori does not teach that the first colored sub-pixel (the first "*G*" in the first row) and the third colored sub-pixel (the second or the third "*G*" in the first row) have different colors from each other.

However, Martin [drawing 3 provided on page 7 of this Office action, which is same as figure 2 of Martin] teaches the concept of arranging two different colored sub-pixels (the first "*G*" in the first row and the first "*R*" in the fist row) consecutively in a row.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the panel of Mori to arrange two different colored sub-pixels consecutively in a row to avoid arranging two same colored sub-pixels consecutively in a row, as taught by Marin, in order to provide an uniform color illumination by placing the four adjacent sub-pixels having two different colors in a pattern such that the two sub-pixels having a same color are not adjacent to each other in a horizontal direction and in a vertical direction.

As to **claim 9**, Mori teaches the column of first colored sub-pixels being the column of blue sub-pixels [drawing 2 provided on page 10 of this Office Action].

As to **claim 10**, Mori as modified by Martin teaches that the sub-pixel repeating group substantially comprises a checkerboard of red and green sub-pixels interspersed with two columns of blue sub-pixels [drawing 3].

As to **claim 11**, Mori as modified by Martin teaches that for each sub-pixel repeating group, the providing driver signals includes providing of scheme violating signals (the signals violating the one-dot inversion polarity scheme) to the two columns of blue subpixels from a same column driver ("*source driver 106*") [fig. 25].

As to **claim 13**, Mori teaches a method of driving a liquid crystal display having a panel [fig. 4, col. 4 lines 1-2, and drawing 1 provided on page 3 of this Office Action] that is substantially tessellated by a sub-pixel repeating group comprising differently colored and individually addressable sub-pixels and having an even number of individually addressable sub-pixels including a first colored sub-pixel (the "*G*" in the first row) [drawing 1], a second colored sub-pixel (the first "*B*" in the first row), and a third colored sub-pixel (the second or the third "*G*" in the first row), in a row [drawing 1], the sub-pixel repeating group further comprising at least one column of blue sub-pixels (the two blue sub-pixels arranged in one column of the sub-pixel repeating group as shown on drawing 1); and the method comprising:

providing signals for image data [col. 1 lines 47-52 and col. 12 lines 12-17].

Mori does not teach the method comprising providing signals for image data having a substantially periodic dot inversion polarity scheme to the panel with use of a driver circuit outputting at least two phases such that it primarily impacts the at least one column of blue subpixels.

However, Examiner takes Official Notice that it is well known in the art to use a periodic 2-line inversion polarity scheme as a driving method of a liquid crystal display.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mori to use a periodic two-line inversion polarity scheme in

order to reduce vertical crosstalk caused by having a plurality of pixels/sub-pixels driven by the same polarity.

Mori as modified above teaches that the providing signals for image data having a substantially periodic dot inversion polarity scheme to the panel outputs at least two phases such that it primarily impacts the at least one column of blue sub-pixels (by having two same colored subpixels having the same polarity in one column, the vertical crosstalk still occurs and the image degradation of blue colors caused by the vertical crosstalk occurs) [drawing 2 provided below, which is same as figure 15 of Mori with the two-line inversion polarity scheme].

Mori does not teach that the first colored sub-pixel, the second colored sub-pixel, and the third colored sub-pixel have different colors from each other. In other words, because Mori teaches two same colored sub-pixels ("*G*""*G*" and "*B*""*B*") [drawing 2] are arranged consecutively in each of the rows, Mori does not teach that the first colored sub-pixel (the first "*G*" in the first row) and the third colored sub-pixel (the second or the third "*G*" in the first row) have different colors from each other.

However, Martin [drawing 3 provided on page 7 of this Office action, which is same as figure 2 of Martin] teaches the concept of arranging two different colored sub-pixels (the first "*G*" in the first row and the first "*R*" in the fist row) consecutively in a row.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the panel of Mori to arrange two different colored sub-pixels consecutively in a row to avoid arranging two same colored sub-pixels consecutively in a row, as taught by Marin, in order to provide an uniform color illumination by placing the four adjacent sub-pixels having

two different colors in a pattern such that the two sub-pixels having a same color are not adjacent to each other in a horizontal direction and in a vertical direction.

As to **claim 14**, Mori as modified above teaches the method comprising providing a correction signal to one or more subpixels (Note that providing the image signals having the two-line inversion polarity scheme is to correct the image degradation caused by having subpixels having the same polarity all the time).

As to **claim 15**, Mori teaches a liquid crystal display [abstract lines 1-2] comprising:

a display panel [fig. 4, col. 4 lines 1-2, and drawing 1 provided on page 3 of this Office Action] including a plurality of sub-pixels arranged in a sub-pixel repeating group; the subpixel repeating group comprising an even number of subpixels in a row, and including a column of dark colored sub-pixels [drawing 1]; and

means [col. 1 lines 47-52 and col. 12 lines 12-17] for providing driver signals to the sub-pixels in the display panel to send image data.

Mori does not expressly teach the means for providing driver signals to the sub-pixels in the display panel to send image data having a dot inversion polarity scheme.

However, Examiner takes Official Notice that it is well known in the art to use a dot inversion polarity scheme as a driving method of a liquid crystal display.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the means for providing the driver signals to use a dot inversion polarity scheme in order to reduce vertical crosstalk caused by having a plurality of pixels/sub-pixels driven by the same polarity.

Mori as modified above inherently teaches that the image degradation of blue color introduced by the signals is localized on the column of dark colored sub-pixels since any image degradation caused by the dot inversion scheme would degrade the quality of the images to be displayed by all of sub-pixels and thus image degradation related to blue colors would be localized on the column of blue colored sub-pixels, which are dark colored sub-pixels.

Mori does not teach that the first colored sub-pixel, the second colored sub-pixel, and the third colored sub-pixel have different colors from each other. In other words, because Mori teaches two same colored sub-pixels ("*G*""*G*" and "*B*""*B*") [drawing 2] are arranged consecutively in each of the rows, Mori does not teach that the first colored sub-pixel (the first "*G*" in the first row) and the third colored sub-pixel (the second or the third "*G*" in the first row) have different colors from each other.

However, Martin [drawing 3 provided on page 7 of this Office action, which is same as figure 2 of Martin] teaches the concept of arranging two different colored sub-pixels (the first "*G*" in the first row and the first "*R*" in the fist row) consecutively in a row.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the panel of Mori to arrange two different colored sub-pixels consecutively in a row to avoid arranging two same colored sub-pixels consecutively in a row, as taught by Marin, in order to provide an uniform color illumination by placing the four adjacent sub-pixels having two different colors in a pattern such that the two sub-pixels having a same color are not adjacent to each other in a horizontal direction and in a vertical direction.

As to **claim 16**, Mori teaches the column of dark colored sub-pixels being the column of blue sub-pixels [drawing 1 provided on page 3 of this Office Action].

As to **claim 17**, Mori as modified by Martin teaches that the sub-pixel repeating group substantially comprises a checkerboard of red and green sub-pixels interspersed with two columns of blue sub-pixels [drawing 3].

As to **claim 18**, Mori as modified by Martin teaches that for each sub-pixel repeating group, the providing driver signals includes providing of scheme violating signals (the signals violating the one-dot inversion polarity scheme) to the two columns of blue subpixels from a same column driver ("*source driver 106*") [fig. 25].

As to **claim 19**, Mori as modified above teaches the liquid crystal display further comprising means for providing correction signals to one or more sub-pixels in the group of sub-pixels (Note that the driver signals used to send image data having a dot inversion polarity scheme corrects the image degradation caused by a plurality of subpixels having a same polarity).

As to **claim 20**, Mori teaches a liquid crystal display [abstract lines 1-2], comprising:

display means including a plurality of sub-pixels arranged in accordance with a panel tessellating sub-pixel repeating group [drawing 1 provided on page 3 of this Office action], the subpixel repeating group being characterized by an even number of subpixels in a row and including at least one column of blue sub-pixels (the two blue sub-pixels included in the rectangular box having gray background); and

driving means [col. 1 lines 47-52 and col. 12 lines 12-17] for providing signals for image data to the display means.

Mori does not expressly teach the driving means for providing signals for image data having a dot inversion polarity scheme to the display means, wherein the driving means has at

least two phases selected such that potential image degradation introduced by the dot inversion polarity scheme is placed substantially upon the at least one column of blue subpixels.

However, Examiner takes Official Notice that it is well known in the art to use a periodic 2-line inversion polarity scheme as a driving method of a liquid crystal display.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the driving means of Mori to provide image data having a periodic two-line inversion polarity scheme in order to reduce vertical crosstalk caused by having a plurality of pixels/sub-pixels driven by the same polarity.

Mori as modified above teaches that the driving means has at least two phases selected (Note that, in the two-line inversion, the polarities of the driving signals are inverted every frame) such that potential image degradation introduced by the dot inversion polarity scheme is placed substantially upon the at least one column of blue subpixels (by having two same colored subpixels having the same polarity in one column, the vertical crosstalk still occurs).

Mori does not teach that the first colored sub-pixel, the second colored sub-pixel, and the third colored sub-pixel have different colors from each other. In other words, because Mori teaches two same colored sub-pixels ("*G*""*G*" and "*B*""*B*") [drawing 2] are arranged consecutively in each of the rows, Mori does not teach that the first colored sub-pixel (the first "*G*" in the first row) and the third colored sub-pixel (the second or the third "*G*" in the first row) have different colors from each other.

However, Martin [drawing 3 provided on page 7 of this Office action, which is same as figure 2 of Martin] teaches the concept of arranging two different colored sub-pixels (the first "*G*" in the first row and the first "*R*" in the fist row) consecutively in a row.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the panel of Mori to arrange two different colored sub-pixels consecutively in a row to avoid arranging two same colored sub-pixels consecutively in a row, as taught by Marin, in order to provide an uniform color illumination by placing the four adjacent sub-pixels having two different colors in a pattern such that the two sub-pixels having a same color are not adjacent to each other in a horizontal direction and in a vertical direction.

As to **claim 21**, Mori as modified above teaches the liquid crystal display comprising means for providing a correction signal to one or more subpixels (Note that providing the image signals having the two-line inversion polarity scheme is to correct the image degradation caused by having subpixels having the same polarity all the time).

As to **claim 25**, Mori as modified above teaches that the use of a driver circuit (Mori: "*106*") [Mori: fig. 25] comprises providing a plurality of two-phase (Note that, in the two-line inversion, the polarities of the driving signals are inverted every frame) driver chips [Mori: col. 12 lines 15-16] for driving respective bounded sections of the display; wherein phases of each provided driver chip are selected such that parasitic effects placed upon imagery of any of the subpixels driven by the phased signals are placed substantially upon subpixels disposed in columns positioned at a boundary of the bounded display sections respectively driven by the driver chips (Note that Examiner construed the boundary of the bounded display sections as the two or three outmost columns of the subpixels of the display sections.).

As to **claim 26**, all of the claim limitations have already been discussed with respect to the rejection of claim 25.

As to **claim 28**, Mori teaches that the driver circuit sends signals indicating image data having a polarity scheme to the panel such that at least two adjacent subpixels in a row have the same polarity [drawing 2 provided on page 10 of this Office action].

As to **claim 29**, Mori as modified above teaches that the means for providing driver signals includes a plurality of two-phase (Note that, in the two-line inversion, the polarities of the driving signals are inverted every frame) driver chips [Mori: col. 12 lines 15-16] for sending the driver signals to the display panel; the phases of each driver chip being selected such that scheme violations introduced by the driver signals are placed substantially upon blue subpixels disposed in columns positioned at a boundary between the driver chips (Note that Examiner construed the boundary of the bounded display sections as the two or three outmost columns of the subpixels of the display sections.).

As to **claim 30**, Mori as modified above teaches that the image degradation is caused by same-color subpixels of same polarity occurring successively one after the next [drawing 2 provided on page 10 of this Office action].

As to **claim 31**, Mori as modified above teaches that the violation tends to cause image degradation due to parasitic effects of parasitic capacitance present in the panel (Note that the vertical cross-talk caused by the vertically arranged sub-pixels having the same polarity is caused by parasitic or stray capacitive effects between a data line and a pixel electrode of the sub-pixels.) (as evidenced by US 5,841,411 col. 1 lines 42-49).

6. **Claims 5** and **12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori as applied to claims 1-2, 8-9, 13-16, 19-21, 25-26, and 28-31 above, and further in view of Francis (US 5,841,411).

As to **claim 5**, Mori does not teach that a correction signal is applied to one or more of the subpixels at which the violation of the periodic dot inversion polarity scheme occurs and the applied a correction signal counters a loss of luminance caused by the violation.

However, Francis teaches the concept of applying a correction signal to one or more subpixels at which a periodic dot inversion polarity scheme does not occur to compensate a loss of the luminance caused by not having the periodic dot inversion [col. 2 lines 29-56] (Note that the vertical cross-talk can be prevented by the periodic dot inversion.).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the liquid crystal display of Mori as modified above to apply a correction signal to one or more subpixels at which the periodic dot inversion polarity scheme does not occur to compensate a loss of the luminance caused by not having the periodic dot inversion, as taught by Francis, in order to reduce the luminance loss caused by the vertical cross-talk.

As to **claim 12**, all of the claim limitations have already been discussed with respect to the rejection of claim 5.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEOKYUN MOON whose telephone number is (571)272-5552. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on 572-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 11, 2010
/Seokyun Moon/
Examiner, Art Unit 2629